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The Promotion of Physical Activity in the United States Population: The Status of Programs in Medical, Worksite, Community, and School Settings

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Synopsis

While the medical care encounter is considered an ideal situation in which patients are encouraged to increase their physical activity levels, very little research has been conducted in this setting. In fact, with the exception of the physical activity components of cardiac rehabilitation programs, few formal physical activity programs are available in medical care settings.

Although the workplace is currently the focus of the greatest interest by those persons who implement physical activity programs, there is little precision in defining what constitutes a worksite physical activity program. A number of researchers and authors, using program experience rather than empirical findings, have described what they believe to be the important components of successful worksites health promotion and physical education programs.

The greatest variety of physical activity programs are found in community settings. They are offered by a number of nonprofit private organizations, nonprofit public agencies, and for-profit organizations. While relatively little research has been done concerning changes in the community environment, it is clear that such changes can effect community participation. Community campaigns to increase physical activity have been studied, and it appears that they clearly affect residents' interest and awareness in physical activity, but they do not have a major effect on behavioral changes in the short term.

It appears that a major opportunity to influence favorable physical activity in the United States is being missed in schools. A large majority of students are enrolled in physical education classes, but the classes appear to have little effect on the current physical fitness levels of children and, furthermore, have little impact on developing life-long physical activity skills.

WHAT IS KNOWN about physical activity participation during leisure time in both Canada and the United States has been described by Stephens and co-workers (1).

In addition, Dishman and co-workers have pointed out that we really know very little about when, why, or how people change their health behaviors, but we do know that most persons who

make health behavior changes do so on their own, seemingly with little or no outside assistance (2,3).

This may also apply when people change their exercise behavior. If persons who are physically active exercise on their own or in groups without attending a formal physical activity program (aerobic dance class) or a restricted fitness facility (exercise room for employees of company x), then

the importance of such programs and facilities in a national effort to increase the percentage of persons engaging in regular physical activity is unclear.

Confusing the issue is the indication that lack of time due to work pressure and laziness are the most frequently mentioned barriers to increasing physical activity (4), yet questionnaire respondents report that better facilities; cheaper facilities; increased family, friend, and partner interest; and the availability of fitness classes and organized sports would stimulate them to be more active (5).

Have people in the United States been stimulated to become more active? It seems so. While no national U.S. survey as comprehensive as the Canada Fitness Survey has been conducted, it is generally safe to say that, judging from the data that do exist, the adult U.S. population engages in more leisure-time activity currently than it did two decades ago, but exactly how much more active it is cannot accurately be determined (1). However, the most active segment of the U.S. population appears similar to respondents of the Canada Fitness Survey in that frequent strenuous exercisers are most likely to be male, under the age of 40, college educated, with household incomes above the median, and in excellent health (6).

What do we know, or at least believe to be true, that would aid in the development of specific recommendations pertaining to physical activity programs in medical care, worksite, community, and school settings?

1. There is a national trend towards increased levels of leisure-time physical activity by many segments of our society. However, only one-fifth of the adult population is physically active at the level generally recommended for cardiovascular fitness (1).

2. The most popular types of physical activities engaged in by the active population are those that can be performed in a group or alone without benefit of a formal class or specialized facilities. The percentage of the population that participates in organized, formal programs is small compared with those who exercise alone.

3. The major barriers to initiating or increasing physical activity are lack of time due to work pressures and lack of personal discipline. Lack of organized physical activity programs and lack of adequate facilities do not seem to be major barriers to participation.

Programs in Medical Settings

With the exception of the physical activity components of cardiac rehabilitation programs, few

formal physical activity programs are available in medical care settings. In recent years, however, some hospitals and larger medical clinics have developed physical activity programs for both their patient population and the general public; yet there are virtually no published reports about the effectiveness of these programs.

From a public health perspective, the patient-physician encounter is an obvious point where a large segment of the population could be encouraged to increase their physical activity levels. The 1982 National Access Survey (7) reports that 90 percent of the survey respondents had a usual source of health care, either a physician's office or a medical clinic, and that 80 percent of the respondents had seen a physician in the previous 12 months.

Additional insight into the opportunity concept can be gained from an analysis of data from a national study of medical and surgical specialties (8). Fifty-four percent of all patient encounters involved general practice, family practice, pediatric, and internal medicine, primary-care physicians. These physician-specialists have numerous encounters of sufficient duration in which they could influence their patients. Yet it appears that few physicians took advantage of these opportunities; that is, in terms of all ambulatory encounters, exercise or diet, or both, were prescribed in less than 10 percent (range of 3.4 percent in general practice to 9.8 percent in internal medicine).

The opportunity for medical personnel to influence patients certainly seems to be there. Data from the Prevention in America Survey shows that, while 62 percent of patients had been given no unsolicited advice by their physicians about improving their health habits, the advice of doctors and nurses was a factor that resulted in persons making changes (9). Also, a majority of respondents (52 percent) indicated they supported a greater emphasis on prevention of disease rather than treatment.

From the Canada Fitness Survey it was reported that 23 percent of Canadians ranked a physician's orders as a significant reason for being active. As age increased, a doctor's advice became more important for initiating or increasing physical activity (10).

A number of studies have found that patients expect physicians to ask about their health habits and to encourage necessary lifestyle changes, including becoming more active (11,12). Unfortunately, even though a large majority of physicians report engaging in regular physical activity, their interest either in assisting patients with fitness prob-

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lems or initiating discussions with patients about fitness does not match patients' expressed desires or expectations (13,14).

The magnitude of the challenge of getting physicians more involved with their patients' fitness problems is obvious from the work of Wells and co-workers, who reported that 39 percent of the physicians in their sample did not counsel patients about exercise, even when the patients had lung or heart disease (15). One of the reasons for physicians not being more aggressive in identifying and dealing with the fitness problems of their patients may be their belief that they cannot alter patient behavior.

A study by Weschsler and co-workers (13) and preliminary research at Mercy Medical Center in Denver, CO, provide some support for this position. They found that less than 10 percent of physicians believed they were successful in helping patients change their behaviors. Preliminary unpublished data collected from family medicine residents at Mercy Medical Center in 1984 are more encouraging. When asked to assess their abilities to assist patients in making behavior changes, 42 percent of physicians rated their abilities as good or excellent. Although it appears that most physicians lack confidence that they can be effective in changing their patients' behavior, preliminary evidence exists which indicates they can (16-19).

Unfortunately, few studies have been conducted using exercise as the dependent variable. In one study, Mulder reports that family practice physicians are effective in helping patients initiate and sustain an exercise program (20). However, other articles on the role of the physician in helping patients become more active have focused on how to write an exercise prescription, not on how physicians effect behavioral change (21-23).

A study being conducted through the Insure Project involving 4,500 randomly selected patients at three control and three experimental sites may provide evidence needed to ascertain the effectiveness of physicians in changing patients' exercise behav-

iors (24,25). The 100 physicians participating in the study are responsible for administering specific protocols to their patients in a number of health areas. One of the protocols is designed to help patients increase their levels of physical activity. Included in the exercise protocol are steps for the physician to take in assessing and managing patients who need to exercise. These steps are followed by specific strategies to use with four patient subgroups: (a) those currently exercising, (b) those who have tried to exercise, (c) those willing to try to exercise, and (d) those not currently willing to exercise. Preliminary data from the Appleton, WI, site indicate that 35.9 percent of patients in an experimental group have begun a program of regular physical activity compared with 28.2 percent in a control group (26).

Based on this evidence we can state, with some degree of certainty, the following about physical activity programs in medical settings:

1. Relatively few medical care settings offer physical activity programs, and most currently offered are associated with cardiac rehabilitation programs.
2. Health practitioners in medical care settings are in an excellent position to encourage and assist patients to become physically active. A majority of patients have a regular source of health care and most see a physician at least once per year.
3. Primary care physicians account for more than 50 percent of all patient encounters and thus have numerous opportunities to ask about and influence their patients' activity patterns. The average patient encounter is of sufficient duration to allow for counseling activities.
4. Patients want and expect physicians to be concerned with their health habits, including physical activity patterns. Also, patients indicate that their physician's advice encourages them to become more active.
5. Physicians do not regularly ask about the physical activity patterns of their patients. Although most physicians believe that being physically active is important, most do not counsel their patients about physical activity.
6. It appears that physicians can be effective in altering patient behavior.

Programs at the Worksites

The worksetting is an ideal site for recruiting participants in physical activity programs. In 1980, more than 91 million adults—some 70 percent of the adult population aged 18 to 65 years—were employed (27). Second, well-developed and effectively

implemented worksite physical activity programs have been shown to result in health and social benefits to participating employees and economic and noneconomic benefits to employers sponsoring these programs (28-35).

Just how great is the interest in worksite physical activity programs, and how many and what type of physical activity programs are in place today? It is not possible to provide precise answers to these questions because there is no general agreement on what constitutes a worksite physical activity program. For example, does having a bowling or softball league, installing a fitness facility, or employing a fitness director qualify? Furthermore, no organization has assumed responsibility for monitoring the number of physical activity programs in worksettings (even though the Association for Fitness in Business (AFB) is probably aware of most programs sponsored by companies employing 250 or more). Data that do exist came from surveys of worksites where information about physical activity programs has been included. While methodological differences in these surveys limit aggregation of data or comparison of results, some general observations are consistent.

It appears that when exercise-fitness programs were available, they tended to be offered on-site, on a continuing basis, and available to all employees. Nearly half of the exercise-fitness program activities were conducted by in-house staff or a combination of in-house staff and outside consultants (36). In general, it can be said that the larger the company, the greater the number of program activities offered to employees (37-42).

It would be worthwhile to know the rate at which worksite physical activity programs are developing; however, of more interest is an understanding of the nature of these programs and the factors that differentiate successful from unsuccessful programs.

Usually it is possible to classify most worksite physical activity programs on the basis of one or more of the four following characteristics:

1. Facility:

- Program has its own physical activity facility;
- Program provides opportunities for employees to use physical activity facilities in the community; or
- Program has neither.

2. Staffing:

- Program is implemented by in-house staff (with outside personnel being used infrequently or for special activities);
- Program is implemented by in-house staff and outside personnel who are responsible for more than half of all activities; or

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- Program is implemented almost totally by outside personnel.

3. Scope:

- Physical activity is part of a comprehensive health promotion program effort, and the program may include hypertension screening, smoking cessation clinics, cardiovascular risk-factor identification, or
- Physical activity is the only major health promotion program.

4. Focus:

- Physical activity program focuses on developing cardiorespiratory fitness (aerobic);
- Physical activity program focuses on development of cardiorespiratory fitness, muscular strength and endurance, and flexibility (total); or
- Physical activity program focuses on a specific problem or specific at-risk employee population, such as a strength and flexibility program for fire-fighters.

In table 1, a number of worksite physical activity programs are classified using these four characteristics. It is obvious from an examination of the table that there is much variance among the programs. Unfortunately, while it is possible to describe and classify these programs on the basis of select characteristics, it is not possible to identify the combination of program characteristics that results in the greatest effects.

There are obvious reasons for this dilemma. First, most evaluations of worksite physical activity programs compare either participants' changes in a self-selected intervention group with those in a nonintervention group, or changes in self-selected participants on a pre- and post-program basis. The limitation ascribed to such research designs prohibits direct comparisons of program characteristics or strategies. Second, the desired outcomes of various programs often differ; therefore, specification of common evaluation outcomes is difficult or impossible.

Table 1. Characteristics of worksite physical activity programs

Worksite	Program characteristics			
	Fitness facility	In-house staff	Comprehensive program	Fitness program focus
Mattel, Inc.	No	No	Yes	...
Tosco Corp.	No	No	Yes	...
Control Data Corp. (Staywell)	Yes	Yes	...
Johnson & Johnson (Live for Life)	No	Yes	Yes	Aerobic
Ford Motor Co. (Dearborn)	Yes	No	Yes	Total
Adolf Coors Brewery	Yes	Yes	Yes	Total
New York Telephone	No	Yes	Yes	...
Metropolitan Life Insurance Company	No	Yes	Yes	...
Swedish Wellness Center	Yes	Yes	Yes	Aerobic
Kimberly-Clark (Health Management Program)	Yes	Yes	Yes	Aerobic
Campbell Soup Company	No	Yes	Yes	Aerobic
U.S. Air Force Heart Program	No	Yes	Yes	...
Canada Life Assurance Co.	Yes	Yes	Yes	Aerobic
Blue Cross/Blue Shield of Indiana	No	Yes (volunteer)	Yes	...
IBM Corporation (Plan for Life)	Some	No	Yes	Total
Internorth, Inc.	Yes	Yes	Yes	Total
National Aeronautics & Space Administration .	Yes	Yes	Yes	Total
Sentry Life Insurance Co.	Yes	Yes	Yes	Total
Weyerhaeuser Company	Yes	Yes	Yes	Total
Xerox Corporation	Yes	Yes	Yes	Aerobic flexibility
General Dynamics	Yes	Yes	No	Total
Tenneco, Inc.	Yes	Yes	Yes	Total
Bonne Bell	Yes	Yes	Yes	Total

For example, company A may offer its employees a fitness program with the desired outcome being a positive change in employee morale and a greater employee commitment to the company. Company B also offers its employees a fitness program, but the desired outcome is a reduction in the number of cardiac events. Theoretically, these programs could be compared, but the comparison is likely to be unfair and conclusions would be very difficult to formulate.

A third reason for the dilemma is that a majority of companies sponsoring health promotion programs, including physical activity programs, do not want to undertake comprehensive evaluation efforts. The expenses or disruptions often associated with evaluations, the reluctance of management to deny (even for a short period) some employees access to the program, or the employer-employee position that the program is a benefit and will not be discontinued even if certain outcomes are not achieved are all reasons for a company's lack of concern about evaluating a program. A statement by the fitness director of Bonne Bell illustrates this management stance. "We don't need to keep statistics on how many people participate or how many miles they run. We don't have to prove it works. We know it works" (43).

Thus, in the end we are left with a plethora of program descriptions and no credible way to make

valid and reliable judgments about which program characteristics or program strategies are most important. What we do have, however, are the collective experiences of many developers, implementers, and evaluators.

A number of researchers and authors have described what they believe to be the most important components of successful worksite health promotion (44) and physical activity programming (24,45,46). These descriptions are based primarily on program experiences rather than on empirical findings, yet several of these component lists have similarities. Elements of successful programs that appear in two or more of the component lists developed by Fielding, Pate and Blair, and Collis (35,45,46) follow:

- Strong leadership (35,45,46). It should be noted that effective leadership for these programs is not necessarily related to type of academic training.
- Ongoing program promotion and recruitment efforts (35,45,46);
- Access to facilities (45,46);
- Long-term commitment to the program (35,44);
- Ongoing fitness assessment of participants (35,45);
- Variety of program options from which to select (35,45);
- System of employee recognition (35,45,46); and

- Involvement of spouses and other family members (35,45).

From the limited data that exist, what can we state, with some degree of certainty, about physical activity programs at the worksetting?

1. Programs at the worksetting can reach a significant portion of the U.S. population.

2. Research findings indicate that well-developed and effectively implemented worksite programs result in both health and social benefits to participating employees and economic and noneconomic benefits to employers.

3. A number of worksite programs currently exist. Generally, the larger the company, the greater the number of activities offered to employees, and most are part of a more comprehensive health promotion program and use in-house staff.

4. A number of employers appear to be interested in offering programs to their employees. Employers also express a desire to use in-house staff and to use free services made available by community agencies.

5. The elements most often associated with worksite physical activity programs include strong leadership, ongoing program promotion and recruitment, access to facilities, long-term commitment, ongoing participant fitness assessment, a variety of activity options, a system of employee recognition, and involvement of spouses and family members.

Community Settings

The largest number and greatest variety of physical activity programs are found in community settings. Organized programs are offered by a number of nonprofit, private organizations including YMCAs, YWCAs, and Jewish Community Centers (JCCs). Nonprofit public agencies, which include parks and recreation departments, school districts, and institutions of higher education, sponsor such activities as softball leagues, racquetball classes, and swimming programs.

In recent years there has been a substantial increase in the number of local clubs which regularly sponsor activities for their members such as jogging clubs, cross-country ski clubs, and bicycling clubs. Profit organizations, such as health, tennis, and racquetball clubs, offer their members a number of organized and nonorganized physical activity opportunities.

Changes in the community environment have provided increased opportunities for persons to en-

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gage in physical activity; examples include the building of bicycle paths, jogging trails, basketball courts, and swimming pools in many communities. Finally, the mass media have played an important role by encouraging persons to increase their levels of physical activity.

Campaigns to alter the exercise levels of residents of a community were part of the Stanford Heart Disease Prevention program and the North Karelia project (47,48). Unfortunately, assessment of changes in the exercise levels was not a focus of the evaluation effort of either project.

A national health promotion media campaign, sponsored by the Department of Health and Human Services, entitled "Healthstyle," included exercise as one of its six target health behaviors (49). Two of the purposes of the campaign were to increase public awareness of the effects of lifestyle on health and to enable persons to assess which lifestyle changes would be most conducive to their health. The primary message transmitted via the media component of the campaign was that individuals should secure a self-scoring test booklet entitled "Healthstyle" so they could score their behavior in six areas, one of which was exercise. The booklet also contained information on the six health areas, including specific recommendations for action.

Selected effects of the campaign on various target audiences were assessed via personal or telephone interviews with a sample of 316 adult (18–65) residents in a test community (Denver) and 345 adult (18–65) residents in a control community (Phoenix). Of the persons who received the booklet (approximately 50 percent of the sample populations), 17 percent indicated they learned something about exercise, and one-third of the total respondents reported attempts to change their behaviors. Of the one-third reporting attempted behavior change, 52 percent reported changes in their exer-

cise behaviors. Between test and control communities there were no statistically significant differences in awareness, beliefs, attitudes, or intentions relating to exercise. Examination of the data using path analysis found that levels of exercise following the campaign were best predicted by initial exercise levels; by the age, sex, and education of respondents; and by the beliefs, attitudes, and subjective norms respondents held about exercising regularly. Regression analysis indicated that attitudes toward exercise were predicted by beliefs about the health benefits of exercise, the social aspects of exercise, and perceptions of barriers to exercise.

In 1977, a national campaign titled "Life—Be in it" was launched in Australia (50). The campaign strategy was based largely on the experiences of the State of Victoria which had initiated a similar campaign 2 years earlier. The underlying purposes of the national campaign were to increase awareness of existing community opportunities for activity and to increase peoples' involvement in leisure-time activities. The campaign included messages delivered via radio and television, distribution of print materials, and involvement of community organizations in sponsoring various leisure-time events. All campaign-related activities carried the "Life—Be in it" logo.

A national sample of 4,000 persons was surveyed in 1979. The activity-related data were compared to data collected in 1975 from a general social survey (the activity questions were the same). The survey results indicate that the campaign had a number of positive effects: 36 percent of respondents reported increased levels of physical activity in the last year, and 81 percent felt they could benefit by engaging in leisure-time activities. The activities in which persons increased their levels of activity were walking (42 percent), those involving the family (19 percent), and organized sports (18 percent). The perceived primary benefits from engaging in leisure-time activities were feeling better (46 percent), improved physical health (41 percent), and improved mental health (24 percent).

Whether the campaign resulted in these or any other changes remains a disputed issue. The official government press release attributes positive changes to the campaign. However, a contrary view of the campaign's effects was expressed by the Australian Institute for Fitness Research and Training which held that the results were at least ambiguous and, if anything, negative. While the campaign seemed to achieve a high level of awareness in the population, it had no discernible effect on behavior

(unpublished manuscript, Sedgwick, A.W.: "Persuading People to Become More Physically Active—a Critical Analysis of the Life-Be-in-It Campaign," Australian Institute for Fitness Research and Training, 1980).

The Minnesota Heart Health Program (MHHP) is a community-based research and demonstration project designed to help communities change the cardiovascular risk factors, morbidity, and mortality of adults aged 25–74 (51,52). The educational strategies are designed to modify in a positive health direction smoking, eating patterns, blood pressure, and physical inactivity. In the physical education program the goals are to increase a person's average daily energy expenditure by 50 kilocalories (Kcal) per day and to increase by 30 percent the proportion of individuals reporting regular physical activity. Through the education program, all persons are encouraged to be more physically active by (a) initiating low- to moderate-intensity physical activities; (b) reducing use of labor-saving devices; and (c) moving about more.

Three strategies are used to achieve the physical activity program goals. First, each community has a screening education center where individuals are invited for cardiovascular risk factor assessment and given information on how to alter physical inactivity behavior. Second, an annual physical activity campaign, carried out in late spring and early summer, offers a continuous series of educational and participatory activities for persons of all ages and fitness levels. Third, physical activity is promoted by providing community members a variety of materials and opportunities for assistance in becoming physically active.

One community involved in the MHHP project has completed two physical activity campaigns. The first campaign, which coincided with National Fitness Week in May 1982, was designed to (a) increase awareness of the benefits of regular physical activity; (b) neutralize perceived barriers to regular physical activity; (c) increase opportunities for exercise participation; and (d) portray physical activity as sociable, enjoyable, and part of a balanced lifestyle.

A variety of educational and promotional events were presented to focus public attention on the attractiveness of regular physical activity. Pre-campaign information highlighting questions and controversies about physical activity was distributed through a series of 15 local newspaper articles between March and May 1982. Public service announcements about fitness week events were produced and aired over local radio and television, and

a special newspaper tabloid, emphasizing the benefits of regular physical activity and a calendar of community events, was widely distributed.

The second physical activity campaign was conducted in May 1983 and emphasized sampling of new and varied exercise behaviors. Multiple-participation opportunities were provided within the community with television, radio, newspaper, and posters used to publicize six major events:

1. a "Jog-N-Log" program for elementary school children,
2. a skill-building "Shape-Up" television series focusing on how to begin and maintain an exercise program,
3. a City Walk,
4. a "Shape-Up" business challenge in which local businesses entered their employees in a friendly competition of exercise participation,
5. distribution of self-help brochures via physicians on how to begin an exercise program, and
6. a "Fitfest" involving a series of entry-level participation events that occurred in conjunction with the community annual summer festival.

The effectiveness of the campaign in exposing and promoting participation was assessed by event participation counts and by a questionnaire survey of randomly selected households.

The results from an evaluation of the two campaigns indicate that both were effective in exposing community members to the campaign messages. Ninety-seven percent of community members reported they had heard of one or more campaign events in the 1982 campaign, with 93 percent reporting that they were aware of one or more events in the 1983 campaign. Event participation in the 1982 campaign was low, with a maximal single-event attendance of 2 to 3 percent at the City Walk; however, in the 1983 campaign, the shape-up challenge involved 11 percent of the general population making it a highly successful activity (unpublished manuscript by Blake, S., and coworkers: "Comparative Effectiveness of Six Methods of Encouraging Community-Wide Physical Activity," Minnesota Heart Health Program, 1984).

The data also indicate that the penetration of both campaigns was substantial and that the campaign reached typically underexposed groups, such as blue-collar and less-educated men and women. Participation rates in campaign events appeared to increase between campaigns, which would indicate a positive trend toward community physical activity.

Based on this evidence, what can we state, with some degree of certainty, about physical activity programs in the community?

1. A number of public, nonprofit, and profit organizations, including health-care organizations, sponsor organized programs for their constituents. These organizations frequently enable persons to be more active via the provision of a variety of physical activity facilities.
2. There have been virtually no controlled studies on the effects of community-based physical activity programs.
3. Community-based programs that use mass media as the core of the intervention appear to be successful in increasing both awareness and interest in physical activity, but not in changing attitudes or exercise behavior in the short term.

Programs in the Schools

Physical activity programs in community, medical care, and worksite settings are necessary if we hope to increase the percentage of Americans engaging in appropriate physical activity on a regular basis; however, one community organization—the schools—underpins the whole effort to achieve the goal of national fitness. The provision of quality programs to students, from kindergarten through high school, in public and private schools, could furnish the needed knowledge and skill base for lifespan physical activity.

The opportunity for the nation's schools to influence favorably the physical activity practices of children and youth is only being partly used, however. Most States require physical education programs, but the frequency of required participation and the effectiveness of that participation are uncertain.

Table 2 presents the results from a 1976–77 study of the State requirements for physical education. Thirty-six States and the District of Columbia had physical education requirements. In 26 States and the District of Columbia, physical education was required at both the elementary and secondary levels, while in 10 other States it was required at various combinations of elementary, junior high, and senior high levels. Four States (Arizona, Florida, Nebraska, and Wyoming) had no physical education requirements. Twenty-nine States with requirements (62 percent) reported that the regulation specified the amount of time devoted to teaching physical education, but only 6 of 47 States (13 percent) required the teaching of specific course

content. Finally, 12 States and the District of Columbia reported plans to alter their physical education requirements. Seven of the proposed changes would strengthen the physical education requirements, three would reduce the scope or strength of the requirements, and two changes would affect the

nature of teaching physical education classes, for example the number of students in a class.

Although a State may require that physical education be taught, the existence of the requirement does not mean that students participate regularly in school physical education programs. For example,

Table 2. State requirements in physical education, 1976-77

State	Physical education required			Specific program	
	Elementary	Junior	Senior	Content required	Recommended for
Alabama ¹	Yes	Yes	Yes	Elem	...
Alaska	No information				
Arizona	No	No	No	No	No
Arkansas	Yes	No	Yes	Yes	No
California	Yes	Yes	Yes	JH,SH	JH,SH
Colorado	No information				
Connecticut	Yes	Yes	Yes	No	No
Delaware	No information				
District of Columbia	Yes	Yes	G10	Yes	Elem
Florida	No	No	No	No	No
Georgia	Yes	Yes	No	Yes	No
Hawaii	No information				
Idaho	Yes	Yes	Yes	Yes	No
Illinois	Yes	Yes	Yes	Yes	No
Indiana	No	No	Yes	Yes	No
Iowa	Yes	Yes	Yes	No	No
Kansas	No	No	Yes	Yes	No
Kentucky	Yes	Yes	Yes	Yes	No
Louisiana	No	No	Yes	Yes	SH
Maine	Yes	Yes	Yes	No	No
Maryland	No	No	Yes	Yes	No
Massachusetts	No information				
Michigan	Yes	Yes	Yes	No	No
Minnesota	Yes	Yes	Yes	Yes	Yes
Mississippi	Yes	No	No	No	No
Missouri	Yes	Yes	Yes	Yes	No
Montana	Yes	Yes	Yes	SH	No
Nebraska	No	No	No	No	No
Nevada	Yes	Yes	Yes	SH	No
New Hampshire	Yes	Yes	No	SH	No
New Jersey	Yes	Yes	Yes	Elem	No
New Mexico	No information				
New York	No information				
North Carolina	Yes	Yes	No	No	No
North Dakota	No information				
Ohio	Yes	Yes	Yes	No	No
Oklahoma	Yes	No	No	JH,SH	No
Oregon	Yes	Yes	Yes	Yes	Elem
Pennsylvania	Yes	Yes	Yes	Yes	No
Rhode Island	No information				
South Carolina	Yes	Yes	Yes	No	No
South Dakota	Yes	Yes	Yes	Yes	Yes
Tennessee	No information				
Texas	Yes	Yes	Yes	No	Yes
Utah	No	Yes	Yes	No	Yes
Vermont	Yes	Yes	Yes	Yes	No
Virginia	Yes	Yes	G10	Yes	No
Washington	Yes	Yes	G10	JH,SH	No
West Virginia	Yes	Yes	Yes	Yes	No
Wisconsin	Yes	Yes	Yes	No	No
Wyoming	No	No	No	Elem	No

Elem—grades 1-6.

JH—grades 7-9.

SH—grades 10-12.

¹ Only State with a time requirement.

it was estimated that in 1974–75, approximately 33 percent of children and adolescents ages 10 to 17 participated in daily school physical education programs (53). Whether this percentage has since increased, decreased, or remained stable is unknown.

A more indepth picture of the status of physical education in the nation's schools can be obtained through analysis of the "Status of Physical Education: 1977–78" survey results. Six hundred and forty-three Directors of Physical Education in school districts throughout the nation were surveyed (54). A total of 553 persons, 86 percent of the sample, completed the 21-page questionnaire.

Among the findings of the survey:

- Ninety percent of the school districts had some type of physical education requirement—usually at the elementary and junior high levels;
- In large city districts (200,000 or more students) at the secondary level, the number of physical education programs and the amount of time allocated to physical education were decreasing;
- More than half of the elective physical education programs were located in the secondary schools of large school districts;
- More than 50 percent of the physical education teachers in grades four through six had academic preparation in physical education, while at the secondary level almost all districts employed persons specially trained in physical education; and
- Most districts (70 percent) did not have a formal program for the physically handicapped.

Based on the performance of students on standardized fitness tests, it appears that most are not being exposed to physical education that is designed to help them achieve reasonable levels of fitness. It is important to note that the components of these standardized fitness tests are not consistent with recently developed fitness tests, such as the American Alliance of Health Physical Education Recreation and Dance (AAHPERD) Health-Related Fitness Test, which includes a number of health-related fitness measures—cardiovascular endurance, muscular strength and endurance, flexibility, and body composition.

The AAHPERD Youth Fitness Test is a standardized test that has been extensively used to assess fitness levels of students. The test measures cardiorespiratory endurance, upper-arm and shoulder-girdle strength, leg explosive power, quickness, and abdominal strength. But these components are not consistent with a more recently developed AAHPERD Health-Related Fitness Test

that emphasizes such measures as cardiovascular endurance, muscular strength and endurance, flexibility, and body composition.

The AAHPERD Youth Fitness Test was last used in 1975 with a probability sample of 8,000 boys and girls in grades 8 through 12. The same test had been administered to students in 1959 and 1965 (55). While students showed significant gains between 1958 and 1965 in all test areas, there were few gains between 1965 and 1975—in fact, for male students no gains were noted. Female students did slightly better, recording gains on 7 of 40 comparisons (4 of the gains were for cardiorespiratory fitness). These results are in sharp contrast to the fitness score changes between the 1958 and 1965 test periods when scores increased for 39 of 48 of the tests for females and 54 of 56 of the tests for males. The authors of the study reported that 4.6 percent of the females and 6.3 percent of the males scored in the 30th percentile or lower—these percentages translate to approximately 1.4 million male and female students (56).

Baseline data on the health-related fitness level of school-aged children were made available in October 1984 with the release of the results of the National Children and Youth Fitness Study (NCYFS) (56) and the results of the AAU/NABISCO Physical Fitness Program annual report of results (57). The NCYFS, sponsored by the Office of Disease Prevention and Health Promotion of the Public Health Service, was designed to

1. assess the physical fitness of children and youth aged 10 to 17;
2. develop physical fitness norms for children and youth aged 10 to 17 on five measures of physical fitness;
3. determine the proportion of students and youth who participate in appropriate physical activity;
4. determine the proportion of children and youth taking part in school physical education programs; and
5. determine the nature, frequency, duration, and services of physical activity received outside of school physical activity programs.

The sample included 10,275 boys and girls in grades 5 through 12 from 140 schools in 19 States. The students completed the Physical Activities Survey questionnaire and then took a test battery, designed to measure body composition; height, weight, and waist; flexibility; muscular strength and endurance; and cardiovascular fitness.

Following are the preliminary results (57). While children seem to receive enough physical education at school. (80.3 percent are enrolled in physical education), it is not of the type to maintain adequate cardiovascular fitness. The percentage of enrollment in physical education drops steeply, from an enrollment of 97 percent in grades 5 and 6 to approximately 50 percent in grades 11 and 12. Most children do not participate in daily physical education classes (the average is 3.6 times per week). School physical education classes concentrate on team sports rather than individual sports. Elementary school children generally attend physical education classes once or twice a week.

In the AAU/NABISCO physical fitness study, it was reported that approximately 74 percent of the youth tested were not able to meet the AAU standard performance set for their sex and age groupings in bent-knee situps, modified pushups, standing long jumps, pullups, and sprints (58). The author concluded that, based on these levels of performance, fitness levels of American youth are below what most physical fitness experts would regard as desirable.

Unfortunately, it is not possible currently to identify the accomplishments of physical activity programs in the schools or to describe the characteristics of successful programs. The reasons for this dilemma are understandable. First, significant confusion exists regarding the desired outcomes of physical education programs. It appears that parents, students, and school administrators have desired outcomes that directly conflict with one another or, at the very least, have the potential for creating an environment in which conflict is likely.

A second reason for the dilemma is that a majority of the research on physical education programs has focused on the physiological, psychological, and social benefits of specially designed physical activity programs. Although scientifically valuable, these studies are limited in their ability to be generalized. What is needed are studies of physical education programs in natural school settings. The National Children and Youth Fitness Study provides information on the fitness levels of school age children, but it provides little data on the type of school physical education program that resulted in the different levels of fitness exhibited by the students.

A third reason relates to the autonomy of American schools. Each State has authority to establish its own guidelines or requirements. Local school districts have autonomy and may or may not adhere to State guidelines or regulations. Classroom teach-

ers have always had their own autonomy. To confuse the issue further, the institutions responsible for preparing school physical education teachers vary considerably in their training emphases. Some programs may emphasize the importance of fitness, others the acquisition of lifetime skills, and still others the development of athletic skills. In the end, we are left with a "Rubik's cube" in trying to identify the accomplishments and characteristics of successful programs.

What can we say with some degree of certainty, about physical activity programs in the schools?

1. The schools represent the ideal setting for influencing the physical activity practices of children and youth. Approximately 95 percent of all children and youth attend school; State and local education authorities have the ability to determine what should be taught, by whom, and for what time period; and schools have regular access to children and, through them, we can foster the early development of health-enhancing behaviors in children.

2. Most States have regulations that require the teaching of physical education at the elementary level or the secondary level, of both. The regulations vary among the States, and adherence rates by State are unknown.

3. In 1974-75, it was estimated that 33 percent of children and youth ages 10 to 17 participated in daily school physical education programs. Results of the recently completed National Children and Youth Fitness Study provide estimates of the percentage of students currently participating in daily school physical education programs.

4. There is little agreement regarding the perceived outcomes of physical education programs. The most frequently stated outcomes are acquisition of athletic skills, development of carry-over lifetime skills, and attainment of an appropriate level of physical fitness.

5. Results from a 1975 national study and preliminary results of the National Children and Youth Fitness Survey indicate that a significant percentage of school-aged children and youth do not have appropriate levels of physical fitness.

Recommendations

Based on what we know or believe to be true about physical activity programs in the medical care, worksite, community, and school settings, what recommendations can we make for future investigation?

1. It is essential that we determine outcomes that we can reasonably expect from physical activity programs.

2. It is important to determine the types and extent of physical activity programs which exist.

3. It is also important that we conduct studies to determine the most effective components of physical activity programs.

4. We must determine the factors that are positively related to the adoption and diffusion of physical activity programs.

5. We must determine expected penetration rates for organized physical activity programs on these populations.

6. We must determine the most effective strategies to motivate persons to increase their levels of regular physical activity.

7. We must determine the effects of physical activity interventions in multiple settings.

8. Programs in all settings should attempt cost-effects and cost-effectiveness analysis.

9. We should attempt to assess retrospectively and prospectively the effects of school physical education programs in adult physical activity levels.

There are numerous other suggestions for future research. We present these, hoping that they will stimulate and encourage the collection of more and better data on physical activity programs for medical care, worksite, community, and school settings.

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